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Translation and validation of a Chinese version of the Fear of Not Mattering Inventory and related instruments in the context of COVID-19

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Abstract: Negative effects of the COVID-19 pandemic, stemming from isolation and loneliness, have resulted in a disproportionately negative impact on college and university students. The construct of mattering to others, and the fear of not mattering, has the potential to explain the effects of pandemic measures on psychological well-being and academic outcomes. As such, the present study conducted an initial translation and validation of Chinese versions of instruments for measuring fear of not mattering (FNM), experiences of feeling defeated and trapped during COVID-19 (Pandemic Experience Scale; PES), anxiety, burnout, and adaptability. Overall, appropriate reliability and validity for the Chinese versions of the instruments were demonstrated. In line with previous research, a positive association of FNM with anxiety and academic burnout and a negative association of FNM with adaptability were found. Uniquely, by evaluating students' experiences during the pandemic (PES), we were able to identify an association between feelings of burnout and feeling defeated and trapped. Likewise, this paper is the first to report a significant correlation between students' pandemic experiences (PES) and FNM, suggesting that individuals with greater fear of being defeated or trapped (two elements of involuntary subordination) are likely to be fearful of being or becoming insignificant.

Keywords: Mattering, Fear of Not Mattering, COVID-19, Negative Experience, Anxiety, Academic Burnout, University and College Students, Validation Study

Introduction

In the over two years that have passed since COVID-19 was first declared a global pandemic by the World Health Organization (Cucinotta & Vanelli, 2020), the profound and ongoing impact of the outbreak on education has become increasingly apparent. The negative consequences on learning, particularly due to the closure of campuses and widespread implementation of online courses restricting face-to-face instruction, have been reported widely (Rodriguez et al., 2021; UNESCO, 2020). From the perspective of psychological well-being, one negative impact on students stems from thwarting of the need for sense of belonging. In fact, sense of belonging, as an important source of psychological well-being, is typically fostered through interactions with classmates in physical classrooms, as was experienced before the outbreak (Bartholomew et al., 2011; Liu & Chung, 2015). Consequently, many scholars have stressed that quarantine measures resulting from the pandemic harm students' mental health (Mamun et al., 2021; Xiong et al., 2020). The negative impact on psychological well-being may be even more serious for college and university students (Li et al., 2020; Kassir et al., 2021), since they often study far away from their families. For college or university students restricted from leaving their dormitories or forced to be alone, such isolation measures may cause more psychological harm, as compared to other populations (Saladino et al., 2020). In fact, research has shown that, for these students, living with their parents is a protective factor against anxiety while social support is negatively correlated with anxiety levels (Cao et al., 2020).

As an important construct in terms of psychological well-being, mattering is defined as feeling significant and important to others (Flett et al., 2019) and develops through interpersonal interactions (Marshall, 2001). Conversely, social isolation leads to a sense of loneliness that contributes to feelings of not mattering (or anti-mattering) (MacDonald et al., 2020) which has been established as a factor leading to negative mental health outcomes, such as stress and distress (Besser et al., 2022), depression and suicidal tendencies (Flett et al., 2019) and an increased fear of not mattering (McComb et al., 2020). Therefore, it is probable that quarantine restrictions which limit students' social interaction lead to decreased feelings of mattering and even fear of not mattering. Subsequently, this fear of not mattering could bring about other negative effects on psychological well-being, such as anxiety and poor adaptability (Besser et al., 2022), and even lack of mattering at school (Flett et al., 2019). As such, a negative association between fear of not mattering and adaptability is expected.

In response to the impacts of the global pandemic on students as a vulnerable population, the role of the psychological construct of mattering merits greater attention, particularly in terms of the fear of not mattering

(FNM) among college or university students since FNM might be more salient in the context of COVID-19 due to physical isolation (Besser et al., 2022). FNM, as a newly developed construct, is an extension of mattering which represents a new conceptual element of mattering: specific fear or anxiety of not being valued or seen as important by others (Besser et al., 2022). As such, FNM and general mattering are distinct constructs. Specifically, FNM involves anxiety (including anxious arousal and fear of being evaluated) related to perceptions of the possibility of not mattering to others, which may lead to unfulfilled interpersonal needs (McComb et al., 2020). Meanwhile, the constructs of mattering and not mattering are not binary endpoints of a uniform continuum, and differ in terms of the emotions and motivations they elicit (Flett, 2022a). Based on the results of multiple regression analysis, the difference between FNM and general mattering was clearly demonstrated in terms of the effects on trait loneliness (McComb et al., 2020), FNM (but not general mattering) was a significant predictor of trait loneliness while general mattering (but not FNM) was a significant predictor of state loneliness. Similar findings were reported by Besser et al. (2022) in that FNM was significantly related with loneliness and was more closely associated with certain specific personalities (i.e., dependency and self-criticism) as compared to general mattering.

To date, the only instrument for measuring the construct of FNM is the Fear of not Mattering Inventory (FMI) developed by Flett (2022b). However, the inventory has yet to be translated into different languages. Given that mattering develops in specific cultural contexts (Tovar, Simon, & Lee, 2009) under specific social norms (Elliot, Kao, & Grant, 2004), the validation of translated versions of instruments across different cultures is vital. The Fear of Not Mattering Inventory (Flett, 2022b), which was the main focus of this study, is a five-item self-report scale that is used to measure fear about not mattering to others. Participants are asked to indicate how much they agree with each statement (with face valid items such as “To what extent are you afraid that you will not matter to other people?”) by responding on a scale from 0 = not at all to 4 = almost all of the time. Total scores are used for interpreting the results, with higher scores indicate more fear of not mattering.

In the present study, we translated the original FMI into a Chinese version and evaluated its applicability among a sample of college and university students from mainland China. Specifically, this study was designed to systematically investigate a) the association between FMI and other potentially related variables commonly reported in the context of the COVID-19 pandemic (i.e., pandemic experience, anxiety, and adaptability), and b) the long-term effects of FMI on students’ academics. As such, the translation and validation of Chinese versions of several related instruments was conducted, including a Pandemic Experience Scale (PES), adapted by Gordon Flett and colleagues (available in Supplement Table S1) from the Involuntary Subordination Questionnaire (Sturman, 2011), that taps feelings of being defeated and trapped by personal experiences in the

pandemic, the COVID-19 State-Anxiety Sources Scale (CSASS) with four subscales evaluating different sources of anxiety toward the pandemic (Bareket-Bojmel et al., 2021), a pandemic-specific Adaptability Scale (PAS), which was first adapted for use during the pandemic by Besser et al. (2022) based on a general Adaptability Scale (Martin et al., 2013), and the Modified Maslach Burnout Inventory–Student Survey (MMBI) including the subscales of exhaustion and cynicism (Schaufeli et al., 2002). It should be noted that scales, such as the Chinese translation of the PAS, differ in specific wording in order to address cultural or linguistic differences. For example, the Chinese version of the PAS includes “COVID-19” (冠肺炎疫情) in four of the nine items.

We evaluated the psychometric properties of the translated FMI and other related instruments and conducted an initial examination of the correlations among the construct of FNM and other variables of interest. These measures were selected on the basis of the expectation that they would be correlated with the Fear of Not Mattering Inventory and thus evidence of the validity of this new inventory. For instance, students who feel trapped and defeated, as assessed by PES items, derived from a measure of involuntary subordination (see Sturman, 2011), should feel demoralized in ways that fuel feelings and fears of being insignificant and ineffective. Similarly, feelings of not mattering should be linked with student burnout given research linking burnout with feelings of not mattering and concerns about being marginalized and being insignificant (see Haizlip, McCluney, Hernandez, Quatrara, & Brashers, 2020).

Methods

We followed a forward-backward translation approach that first involved translating the scales into Chinese (see Supplement Table S1) and then back-translating the preliminary Chinese version into English. A native speaker of English, also fluent in Chinese, conducted a back-translation of the Chinese version and, in collaboration with other researchers, conducted a preliminary evaluation of the cross-cultural validity and consistency of the Chinese version of the instrument in terms of content equivalence (cultural relevance) and semantic equivalence (consistency of meaning between the English and Chinese versions) (Flaherty et al, 1988).

As the consistency of the items was deemed acceptable, validation of these translated instruments was conducted with a sample of 2,081 college and university students who completed an online version of the instruments (67.3% females, 55.7% first-year, 31.4% majoring in science and 25.8% majoring in management). Furthermore, we evaluated descriptive statistics and Pearson correlations for all scales and sub-scales for both the overall sample as well as through a comparison of differences according to sex. Subsequently, McDonald's ω , and confirmatory factor analysis (CFA) with LISREL 10.20 were used to analyze the data.

Results

The descriptive statistics and Pearson correlations for each of the variables are presented in Table 1. The results indicate that participants reported relatively high levels of adaptability in facing the pandemic (mean PAS = 4.67, SD = 1.42, median PAS = 4.00), and low levels of FNM (mean FMI = 5.65, SD = 3.72, median FMI = 7.50), low levels of negative experience and anxiety toward the COVID-19 pandemic (mean PES = 2.33, SD = 1.02, median PES = 3.00; mean CSASS = 2.79, SD = 1.47, median CSASS = 4.00), and low levels of academic burnout (mean MMBI = 1.44, SD = 0.95, median MMBI = 2.00). It should be noted that the mean level of fear of not mattering was comparable to means reported elsewhere, though slightly lower (e.g., McComb et al., 2020).

In terms of the associations among FNM and other variables, moderate and positive correlations ($p < 0.01$) were found between FNM and experiences of feeling defeated ($r = 0.65$) and trapped ($r = 0.63$), COVID-19 anxiety ($r = 0.38$ to 0.56), and academic burnout (exhaustion: $r = 0.45$ and cynicism: $r = 0.46$) while FNM was significantly and negatively correlated with adaptability ($r = -0.12$, $p < 0.01$).

Regarding differences among the variables in terms of the sex of the respondent, significant differences between male and female students were found for all variables, except for Economic State-Anxiety (see Table 2). Among these variables, females demonstrated higher adaptability than males ($t = 3.56$, $p < 0.01$), and males scored higher than females for the variables of fear of not mattering ($t = 2.02$, $p = 0.04$), pandemic experiences of feeling defeated ($t = 4.71$, $p < 0.01$) and trapped ($t = 3.56$, $p < 0.01$), and the other three sources of COVID-19 state-anxiety ($t = 2.58$ to 3.49 , all $p < 0.01$), and burnout (exhaustion: $t = 2.77$ and cynicism: $t = 4.12$, both $p < 0.01$). In terms of the correlations among variables, there only one obvious difference was found between males and females (see Supplement Tables S2 and S3). That is, the correlation between adaptability and other variables was only significant for females while, for males, adaptability had no significant correlations with other variables.

The results from analysis of the psychometric properties of the instruments are displayed in Table 3. For FMI and CSASS, the results showed that the two scales had good internal reliability (McDonald's ω was 0.951 for the FMI and were all above 0.960 for the four subscales of the CSASS) and satisfactory factorial validity (FMI: $\chi^2 = 42.74$ [$df = 5$], CFI, NNFI, RMSEA, and SRMR were 0.963, 0.925, 0.059 and 0.005, respectively; CSASS $\chi^2 = 310.42$ [$df = 48$], CFI, NNFI, RMSEA, and SRMR were 0.993, 0.990, 0.051 and 0.011, respectively). Regarding PES, PAS and MMBI, the McDonald's ω coefficients were all above 0.90, indicating good internal reliability. Moreover, except for unsatisfactory RMSEA, other fit indices for these three scales met the standard criteria (i.e., the factor loadings of each item were all higher than 0.60, CFI and NNFI values were all higher than 0.90, and SRMR values were all less than 0.05).

Finally, after adding the correlated measurement errors between items, all the fit indices met the criteria (see Table 3).

Discussion

In the face of an ongoing COVID-19 pandemic, one great concern has been the role of social distancing measures in exacerbating feelings of loneliness (Casale & Flett, 2020) which could arouse the fear of not mattering to others (McComb et al., 2020). Therefore, at present, it is essential to study mattering, particularly the construct of fear of not mattering, as this phenomenon has not been sufficiently discussed in the psychological literature (Casale & Flett, 2020). In the present study, we translated and validated Chinese versions of the recently developed instrument for the construct of fear of not mattering (Flett, 2020) and other instruments relevant to FNM [i.e., experiences resulting in feelings of defeat and entrapment during the pandemic, anxiety towards COVID-19 (Bareket-Bojmel et al., 2021), adaptability during the pandemic (Martin et al., 2013), and academic burnout (Schaufeli et al., 2002)]. An initial evaluation demonstrated high internal reliability and acceptable factorial validity for the Chinese version of the above instruments, which can serve to inform follow-up studies exploring the concept of mattering in Chinese cultural contexts.

In addition to the appropriate reliability and validity of the Chinese versions of the instruments, the finding of an association between fear of not mattering with other constructs is in line with the literature linking feelings of not mattering with negative psychological outcomes (Besser et al., 2022; Casale & Flett, 2020; McComb et al., 2020). According to the correlation coefficients, students' fear of not mattering demonstrated substantial correlations with negative experiences of defeat, entrapment, and anxiety. This may be because the CSASS measure also includes items related to anxiety from loneliness during the pandemic (e.g., I am tense about my loneliness) (Bareket-Bojmel et al., 2021), which are directly related to feelings of fear of not mattering (MacDonald et al., 2020). Subsequently, when FNM is aroused, it undermines students' resilience (Casale & Flett, 2020) resulting in greater negative perceptions of experiences during the pandemic due to the loss of the buffering effect of the protective factor of resilience. As the association between FNM and academic burnout was relatively weak, it is reasonable to postulate that the influence of FNM on students' academic burnout may be mediated by other variables – a mechanism worthy of further study in the future. Nevertheless, this research found a novel association between fear of not mattering and burnout in students. This aligns with the limited research thus far on feelings of not mattering and burnout. It is plausible that a sequence is involved here with fears of not mattering fueling excessive striving and burnout among students who greatly fear being insignificant and being seen as insignificant.

However, it is possible that feelings of burnout can also heighten the sense of feeling insignificant and this fuels fears of not mattering in the future.

Limitation

The main limitation of this study is the fact that the data were collected after quarantine restrictions had already been lifted. That is, although the participants all experienced social distancing measures (i.e. isolation in school dormitories), by the time the online survey was administered, they had returned to normal school life for more than a year. While the instructions for the instruments asked participants to recall their experiences during the implementation of strict pandemic measures, the role of time and change in environment in terms of individual perceptions may account for the low reported levels of fear of not mattering, negative experience, and anxiety. As such, these results must be interpreted with caution. Moreover, concerning the relatively high value of RMSEA for PES, AS, and MMBI, further research is suggested (e.g., adding the correlation estimations of the measurement residuals and comparing these with other subjects). Likewise, the finding that adaptability was only significantly correlated with other variables of interest for females and not for males was unexpected and warrants further analysis.

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Declaration of conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Availability of data and material

Data will be made available upon reasonable request.

Ethics Approval and informed consent

Ethical approval for the study was obtained from Jiangxi Psychological Consultant Association (IRB approval reference number: JXSSL-2022-Jul13). The study complied with the Declaration of Helsinki and with the protection of personal data.

Authors' contributions

All authors significantly contributed to the preparation of this manuscript.

References

- Bareket-Bojmel, L., Shahar, G., & Margalit, M. (2021). COVID-19-related economic anxiety is as high as health anxiety: Findings from the USA, the UK, and Israel. *International Journal of Cognitive Therapy, 14*(3), 566-574. <https://doi.org/10.1007/s41811-020-00078-3>
- Bartholomew, K., Ntoumanis, N., Ryan, R., Bosch, J., & Thøgersen-Ntoumani, C. (2011). Self-determination theory and diminished functioning: The role of interpersonal control and psychological need thwarting. *Personality and Social Psychology Bulletin, 37*(11), 1459-1473. <https://doi.org/10.1177/0146167211413125>
- Besser, A., Flett, G. L., Nepon, T., & Zeigler-Hill, V. (2022). Personality, cognition, and adaptability to the COVID-19 pandemic: Associations with loneliness, distress, and positive and negative mood states. *International Journal of Mental Health and Addiction, 20*(2), 971-995. <https://doi.org/10.1007/s11469-020-00421-x>
- Cao, W., Fang, Z., Hou, G., Han, M., Xu, X., Dong, J., & Zheng, J. (2020). The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Research, 287*, 112934. <https://doi.org/https://doi.org/10.1016/j.psychres.2020.112934>
- Casale, S., & Flett, G. L. (2020). Interpersonally-based fears during the COVID-19 pandemic: Reflections on the fear of missing out and the fear of not mattering constructs. *Clinical Neuropsychiatry, 17*(2), 88-93. <https://doi.org/10.36131/cn20200211>
- Cucinotta, D., & Vanelli, M. (2022). WHO declares COVID-19 a pandemic. *Acta Bio Medica, 91*(1), 157-160. <https://doi.org/10.23750/abm.v91i1.9397>
- Elliott, G., Kao, S., & Grant, A. M. (2004). Mattering: Empirical validation of a social-psychological concept. *Self and Identity, 3*(4), 339-354. <https://doi.org/10.1080/13576500444000119>
- Flaherty, J. A., Gaviria, F. M., Pathak, D., Mitchell, T., Wintrob, R., Richman, J. A., & Birz, S. (1988). Developing instruments for cross-cultural psychiatric research. *Journal of Nervous and Mental Disease, 176*(5), 257-263. <https://doi.org/10.1097/00005053->

198805000-00001

- Flett, G. L. (2022a). An introduction, review, and conceptual analysis of mattering as an essential construct and an essential way of life. *Journal of Psychoeducational Assessment*, 40(1), 3-36. <https://doi.org/10.1177/07342829211057640>
- Flett, G. L. (2022b). *The fear of not mattering: Development and correlates of a new measure*. Manuscript in preparation.
- Flett, G. L., Khan, A., & Su, C. (2019). Mattering and psychological well-being in college and university students: Review and recommendations for campus-based initiatives. *International Journal of Mental Health and Addiction*, 17(3), 667-680. <https://doi.org/10.1007/s11469-019-00073-6>
- Haizlip, J., McCluney, C., Hernandez, M., Quatara, B., & Brashers, V. (2020). Mattering: How organizations, patients, and peers can affect nurse burnout and engagement. *The Journal of Nursing Administration*, 50, 267-273. <https://doi.org/10.1097/NNA.0000000000000882>.
- Kassir, G., El Hayek, S., Zalzale, H., Orsolini, L., & Bizri, M. (2021). Psychological distress experienced by self-quarantined undergraduate university students in Lebanon during the COVID-19 outbreak. *International Journal of Psychiatry in Clinical Practice*, 25(2), 172-179. <https://doi.org/10.1080/13651501.2021.1900872>
- Li, S. W., Wang, Y., Yang, Y. Y., Lei, X. M., & Yang, Y. F. (2020). Analysis of influencing factors of anxiety and emotional disorders in children and adolescents during home isolation during the epidemic of novel coronavirus pneumonia. *Chinese Journal of Child Health*, 28(3), 1-9.
- Liu, J. D., & Chung, P.-K. (2015). Development and initial validation of the Chinese version of psychological needs thwarting scale in physical education. *Journal of Teaching in Physical Education*, 34(3). <https://doi.org/10.1123/jtpe.2014-0053>
- MacDonald, K. B., Kumar, A., & Schermer, J. A. (2020). No laughing matter: How humor styles relate to feelings of loneliness and not mattering. *Behavioral Sciences*, 10(11), 165. <https://www.mdpi.com/2076-328X/10/11/165>
- Mamun, M. A., Sakib, N., Gozal, D., Bhuiyan, A. I., Hossain, S., Bodrud-Doza, M., ... & Pakpour, A. H. (2021). The COVID-19 pandemic and serious psychological consequences in Bangladesh: a population-based nationwide study. *Journal of Affective Disorders*, 279, 462-472. <https://doi.org/10.1016/j.jad.2020.10.036>
- Marshall, S. K. (2001). Do I matter? Construct validation of adolescents' perceived mattering to parents and friends. *Journal of Adolescence*, 24(4), 473-490. <https://doi.org/10.1006/jado.2001.0384>
- Martin, A. J., Nejad, H. G., Colmar, S., & Liem, G. A. D. (2013). Adaptability: How students' responses to uncertainty and novelty predict their academic and non-academic outcomes. *Journal of Educational Psychology*, 105(3), 728-746. <https://doi.org/10.1037/a0032794>
- McComb, S. E., Goldberg, J. O., Flett, G. L., & Rose, A. L. (2020). The double jeopardy of feeling lonely and unimportant: State and trait loneliness and feelings and fears of not mattering. *Frontiers in Psychology*, 11. <https://doi.org/10.3389/fpsyg.2020.563420>
- Rodriguez, M. B., Cobo, C., Munoz-Najar, A., & Ciarrusta, I. S. (2021). *Remote learning during the global school lockdown: Multi-country lessons*. The World Bank Group. <https://openknowledge.worldbank.org/handle/10986/36141>
- Saladino, V., Algeri, D., & Auriemma, V. (2020). The psychological and social impact of COVID-19: New perspectives of well-being. *Frontiers in Psychology*, 11(2550).

- <https://doi.org/10.3389/fpsyg.2020.577684>
- Schaufeli, W. B., Martínez, I. M., Pinto, A. M., Salanova, M., & Bakker, A. B. (2002). Burnout and engagement in university students: A cross-national study. *Journal of Cross-Cultural Psychology*, 33(5), 464-481. <https://doi.org/10.1177/0022022102033005003>
- Sturman, E. (2011). Involuntary subordination and its relation to personality, mood, and submissive behavior. *Psychological Assessment*, 23, 262–276. <https://doi.org/10.1037/a0021499>
- Tovar, E., Simon, M. A., & Lee, H. B. (2009). Development and validation of the college mattering inventory with diverse urban college students. *Measurement and Evaluation in Counseling and Development*, 42(3), 154-178. <https://doi.org/10.1177/0748175609344091>
- UNESCO. (2020). *COVID-19 webinar: A new world for teachers, education's frontline workers - COVID-19 education webinar #2*. <https://en.unesco.org/news/covid-19-webinar-new-world-teachers-educations-frontline-workers-covid-19-education-webinar-2>
- Xiong, J., Lipsitz, O., Nasri, F., Lui, L. M. W., Gill, H., Phan, L., Chen-Li, D., Iacobucci, M., Ho, R., Majeed, A., & McIntyre, R. S. (2020). Impact of COVID-19 pandemic on mental health in the general population: A systematic review. *Journal of Affective Disorders*, 277, 55-64. <https://doi.org/10.1016/j.jad.2020.08.001>

Table 1 Descriptive statistics and Pearson correlations for all scales and sub-scales

<i>N</i> = 2,081	Mean (SD) range	<i>r</i> (<i>p</i> -value)												
		1	2	3	4	5	6	7	8	9	10	11	12	
1. FMI	5.65 (3.72) 0-15	1.00												
2. PES: Overall	2.33 (1.02) 1-5	.65**	1.00											
3. PES: Defeated	2.27 (1.05) 1-5	.65**	.98**	1.00										
4. PES: Trapped	2.39 (1.03) 1-5	.63**	.98**	.94**	1.00									
5. CSASS: Overall	2.79 (1.47) 1-7	.54**	.74**	.74**	.73**	1.00								
6. CSASS: H_ANX	2.43 (1.59) 1-7	.49**	.63**	.64**	.61**	.85**	1.00							
7. CSASS: E_ANX	3.20 (1.78) 1-7	.38**	.60**	.58**	.60**	.86**	.59**	1.00						
8. CSASS: D_ANX	2.78 (1.64) 1-7	.51**	.68**	.68**	.66**	.92**	.73**	.72**	1.00					
9. CSASS: I_ANX	2.77 (1.62) 1-7	.56**	.72**	.72**	.70**	.92**	.73**	.70**	.83**	1.00				
10. PAS	4.67 (1.42) 1-7	-.12**	-.16**	-.16**	-.15**	-.09**	-.07**	-.08**	-.07**	-.10**	1.00			
11. MMBI: Overall	1.44 (0.95) 0-4	.47**	.66**	.65**	.65**	.64**	.50**	.57**	.59**	.60**	-.03	1.00		
12. MMBI: EXH	1.49 (0.98) 0-4	.45**	.64**	.63**	.64**	.62**	.47**	.56**	.57**	.59**	-.02	.97**	1.00	
13. MMBI: CYN	1.37 (1.00) 0-4	.46**	.64**	.64**	.63**	.62**	.49**	.55**	.57**	.57**	-.03	.96**	.87**	1.00

** $p < 0.01$; FMI = Fear of Not Mattering Inventory; PES = Pandemic Experience Scale (Defeated= Subscale of feeling defeated; Trapped = Subscale of feeling trapped); CSASS = COVID-19 State-Anxiety Sources Scale (H_ANX = Subscale of Health State-Anxiety; E_ANX= Subscale of Economic State-Anxiety; D_ANX = Subscale of Daily Routine Change State-Anxiety; I_ANX = Subscale of Isolation State-Anxiety); PAS = Pandemic-specific Adaptability Scale; MMBI = Modified Maslach Burnout Inventory–Student Survey (EXH = Subscale of Exhaustion; CYN = Subscale of Cynicism)

Table 2 Sex differences among all scales and sub-scales

	Mean (SD)		<i>t</i> (<i>p</i> -value)	Cohen's <i>d</i>
	Male students (<i>n</i> = 680)	Female students (<i>n</i> = 1,401)		
Fear of not Mattering	5.90 (4.03)	5.55 (3.55)	2.02 (0.04)	0.09
Pandemic Experience	2.47 (1.08)	2.27 (0.99)	4.20 (<0.01)	0.20
Experiences of feeling defeated	2.43 (1.11)	2.20 (1.01)	4.71 (<0.01)	0.22
Experiences of feeling trapped	2.51 (1.09)	2.33 (0.99)	3.56 (<0.01)	0.17
COVID-19 State-Anxiety	2.92 (1.57)	2.73 (1.42)	2.69 (<0.01)	0.13
Health State-Anxiety	2.56 (1.69)	2.37 (1.54)	2.58(0.01)	0.12
Economic State-Anxiety	3.23 (1.81)	3.19 (1.77)	0.52(0.61)	0.02
Daily Routine Change State-Anxiety	2.94 (1.72)	2.70 (1.60)	3.13(<0.01)	0.15
Isolation State-Anxiety	2.94 (1.73)	2.68 (1.56)	3.49(<0.01)	0.16
Pandemic-specific Adaptability Scale	4.51 (1.56)	4.75 (1.35)	-3.56(<0.01)	0.17
Burnout	1.54 (1.02)	1.39 (0.92)	3.49(<0.01)	0.16
Exhaustion	1.57 (1.04)	1.45 (0.94)	2.77(<0.01)	0.13
Cynicism	1.50 (1.06)	1.31 (0.97)	4.12 (<0.01)	0.19

Table 3 Psychometrics properties of the instruments

Name of the instrument	Internal reliability	Factorial validity					
		Fit indices					
	McDonald's ω	χ^2 (df)	CFI	NNFI	RMSEA (90% interval)	SRMR	Factor loading
Fear of not Mattering Inventory	0.951	42.74 (5)	0.963	0.925	0.059 (0.044-0.060)	0.005	0.92-0.94
Pandemic Experience Scale	a). Experiences of feeling defeated: 0.957 b). Experiences of feeling trapped: 0.942	837.25 (34)	0.982	0.975	0.107 (0.078-0.091)	0.015	0.80-0.95
		399.96 (33) ^a	0.988 ^a	0.984 ^a	0.073 ^a (0.067-0.080)	0.009 ^a	0.79-0.95 ^a
COVID-19 State-Anxiety Sources Scale	a). Health state-anxiety: 0.960 b). Economic state-anxiety: 0.966 c). Daily routine change state-anxiety: 0.968 d). Isolation state-anxiety: 0.973	310.42(48)	0.993	0.990	0.051 (0.046-0.057)	0.011	0.94-0.95
Pandemic-specific Adaptability Scale	0.981	787.67 (27)	0.972	0.963	0.116 (0.109-0.123)	0.014	0.90-0.94
		334.29 (25) ^b	0.989 ^b	0.984 ^b	0.077 ^b (0.070-0.085)	0.011 ^b	0.89- 0.93 ^b
Modified Maslach Burnout Inventory– Student Survey	a). Exhaustion: 0.944 b). Cynicism: 0.939	1073.28 (26)	0.958	0.942	0.139 (0.132-0.146)	0.025	0.87-0.93
		390.23 (23) ^c	0.985 ^c	0.977 ^c	0.088 ^c (0.080-0.095)	0.014 ^c	0.85-0.94 ^c

CFI = comparative fit index; NNFI = non-normed fit index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual

^a Item uniqueness was correlated for the following pairs: Items 1 and 2

^b Item uniqueness was correlated for the following pairs: Items 3 and 4; Items 4 and 5

^c Item uniqueness was correlated for the following pairs: Items 1 and 2; Items 1 and 3; Items 8 and 9

Supplement Table S1 Instruments used in this study

Fear of Not Mattering Inventory	
Item mean (SD)	Notes
1. Item 1/1.17 (0.79)	1. Source: Flett, G. (2022). <i>The fear of not mattering: Development and correlates of a new measure</i> . Manuscript in preparation. 2. Publication of the full scale is in preparation and will be available when published. Please refer questions regarding use of this scale to the authors.
2. Item 2/1.11 (0.83)	
3. Item 3/1.09 (0.81)	
4. Item 4/1.17 (0.81)	
5. Item 5/1.11 (0.81)	
Overall mean (SD): 5.65 (3.72)	
COVID-19 State-Anxiety Sources Scale	
Health State-Anxiety Subscale	
1. I am tense about the possibility of getting sick or that I already was sick with Corona.	我很紧张自己可能会（或已经）感染新冠肺炎。
2. I feel upset about the possibility the possibility of getting sick or that I already was sick with Corona.	我对于自己可能会（或已经）感染新冠肺炎而感到很心烦。
3. I am worried about the possibility of getting sick or that I already was sick with Corona.	我很担忧自己可能会（或已经）感染新冠肺炎。
Economic State-Anxiety Subscale	
4. I am tense about my economic situation.	我对我的经济状况感到很紧张。
5. I feel upset about my economic situation	我对我的经济状况感到很心烦。
6. I am worried about my economic situation.	我担忧我的经济状况。
Daily Routine Change State-Anxiety Subscale	

7. I am tense by the fact that my routine has changed.	我很紧张，因为我每日例行的作息方式改变了。
8. I feel upset by the fact that my routine has changed.	我觉得很心烦，因为我每日例行的作息方式改变了。
9. I am worried by the fact that my routine has changed.	我很担忧，因为我每日例行的作息方式改变了。
Isolation State-Anxiety Subscale	
10. I am tense about my loneliness.	我对自己的孤独感到很紧张。
11. I feel upset about my loneliness.	我为自己的孤独感到很心烦。
12. I am worried about my loneliness.	我很担忧我的孤独感。
Pandemic Experience Scale	
Feeling defeated subscale	
1. I feel completely knocked out of action.	我觉得完全筋疲力尽了。
2. I feel like I have lost my standing in the world.	我觉得我没有立足之地。
3. I feel like life has treated me like a punching bag.	我觉得生活像对待出气筒一样对待我。
4. I feel like my confidence has been knocked out of me.	我觉得我的信心被击垮了。
5. I feel defeated by life.	我觉得被生活打败了。
Feeling trapped subscale	
6. I feel trapped by my circumstances.	我觉得我被当前的情况给困住了。
7. I feel powerless to change things.	我觉得无力改变事情。
8. I feel trapped by other people's actions and decisions.	我觉得自己被别人的行为和决定给困住了。
9. I can see no way out of my situation.	我无法摆脱我的处境。
10. I feel trapped inside myself.	我觉得被自己困住了。
Pandemic-specific Adaptability Scale	
1. I am able to think through a number of possible options to assist me in this new situation.	在新冠肺炎疫情所带来的新变局环境下，我能够充分考虑一些可能的方案来帮助我自己。

2. I am able to revise the way I think about this new situation to help me through it.	针对新冠肺炎疫情所带来的新变局，我能够改变原来的思维方式以帮助自己度过。
3. I am able to adjust my thinking or expectations to assist me in this new situation if necessary.	如果有必要，我能够调整我的思维或期望，以协助我应对这种新情况（指新冠肺炎疫情带来的新变局）。
4. I am able to seek out new information, helpful people, or useful resources to effectively deal with this new situation.	我能够寻找新的信息、寻求能提供帮助的人，或有用的资源来有效地因应新冠疫情所带来的新变局。
5. In this uncertain situation, I am able to develop new ways of going about things (e.g. a different way of asking questions or finding information) to help me through.	在新冠肺炎疫情带来的新变局环境下，我能够发展出新的方法来帮助我度过难关（例如，以不同的方式提出问题或寻找信息）。
6. To assist me in this new situation, I am able to change the way I do things if necessary.	为了协助自己应对新冠疫情带来的新变局，我能够在必要时改变我的做事方式。
7. I am able to reduce negative emotions (eg. fear) to help me deal with this uncertain situation.	我能够减少负面情绪（如恐惧）以帮助我应对新冠疫情带来的不确定的情况。
8. When uncertainty arises in this situation, I am able to minimize frustration or irritation so I can deal with it best.	当新冠疫情带来的新变局出现不确定性时，我能够将沮丧或烦躁感降到最低，这样我就能尽力来面对它了。
9. To help me through this new situation, I am able to draw on positive feelings and emotions (e.g. enjoyment, satisfaction).	我能够利用积极的感觉和情绪（如享受、满意）来帮助自己度过这个新情况（指新冠疫情带来的新变局）。
Modified Maslach Burnout Inventory – Student Survey	
Exhaustion Subscale	
1. I feel emotionally drained by school and my studies.	学习让我感到情绪枯竭。
2. I feel used up at the end of a school day.	一整天学习下来我感到精疲力尽。
3. I feel tired when I get up in the morning and I have to face another school day.	清早起来，想到要面对一天的学习，便感到很疲倦。
4. Attending a class has really become a strain for me.	上课对我来说真的是一种沉重压力。

5. I feel burned out by school.	学校真的让我感觉倦怠。
Cynicism Subscale	
6. I have become less interested in my studies since I started school.	自从我开始上学以来，我对学习越来越不感兴趣。
7. I have become less enthusiastic about my studies.	我对学习变得不那么热情了。
8. I have become more cynical about the potential usefulness of being in college right now.	我现在对上大学的潜在用处变得更加怀疑。
9. I have started to doubt the significance or relevance of what I am learning.	我开始怀疑我所学的内容的重要性或相关性。

Supplement Table S2 Descriptive statistics and Pearson correlations among male students

<i>N</i> = 680	Mean (SD) range	<i>r</i> (<i>p</i> -value)												
		1	2	3	4	5	6	7	8	9	10	11	12	
1. FMI	5.90 (4.03) 0-15	1.00												
2. PES: Overall	2.47 (1.08) 1-5	.69**	1.00											
3. PES: Defeated	2.43 (1.11) 1-5	.69**	.99**	1.00										
4. PES: Trapped	2.51 (1.09) 1-5	.67**	.98**	.94**	1.00									
5. CSASS: Overall	2.92 (1.57) 1-7	.56**	.76**	.76**	.75**	1.00								
6. CSASS: H_ANX	2.56 (1.69) 1-7	.53**	.69**	.69**	.66**	.88**	1.00							
7. CSASS: E_ANX	3.23 (1.81) 1-7	.42**	.65**	.63**	.64**	.88**	.65**	1.00						
8. CSASS: D_ANX	2.94 (1.72) 1-7	.52**	.70**	.69**	.68**	.94**	.77**	.77**	1.00					
9. CSASS: I_ANX	2.94 (1.73) 1-7	.56**	.73**	.72**	.72**	.93**	.75**	.75**	.85**	1.00				
10. PAS	4.51 (1.56) 1-7	-.05	-.06	-.07	-.05	.03	.01	.05	.06	.00	1.00			
11. MMBI: Overall	1.54 (1.02) 0-4	.49**	.65**	.64**	.65**	.65**	.54**	.61**	.60**	.59**	.14**	1.00		
12. MMBI: EXH	1.57 (1.04) 0-4	.46**	.65**	.63**	.64**	.64**	.53**	.61**	.59**	.59**	.15**	.98**	1.00	
13. MMBI: CYN	1.50 (1.06) 0-4	.48**	.62**	.61**	.61**	.62**	.52**	.57**	.57**	.56**	.13**	.97**	.89**	1.00

** $p < 0.01$; FMI = Fear of Not Mattering Inventory; PES = Pandemic Experience Scale (Defeated= Subscale of feeling defeated; Trapped = Subscale of feeling trapped); CSASS = COVID-19 State-Anxiety Sources Scale (H_ANX = Subscale of Health State-Anxiety; E_ANX= Subscale of Economic State-Anxiety; D_ANX = Subscale of Daily Routine Change State-Anxiety; I_ANX = Subscale of Isolation State-Anxiety); PAS = Pandemic-specific Adaptability Scale; MMBI = Modified Maslach Burnout Inventory–Student Survey (EXH = Subscale of Exhaustion; CYN = Subscale of Cynicism)

Supplement Table S3 Descriptive statistics and Pearson correlations among female students

<i>N</i> = 1401	Mean (SD) range	<i>r</i> (<i>p</i> -value)												
		1	2	3	4	5	6	7	8	9	10	11	12	
1. FMI	5.55 (3.55) 0-15	1.00												
2. PES: Overall	2.27 (0.99) 1-5	.62**	1.00											
3. PES: Defeated	2.20 (1.01) 1-5	.63**	.98**	1.00										
4. PES: Trapped	2.33 (0.99) 1-5	.60**	.98**	.94**	1.00									
5. CSASS: Overall	2.73 (1.42) 1-7	.53**	.73**	.72**	.71**	1.00								
6. CSASS: H_ANX	2.37 (1.54) 1-7	.46**	.60**	.60**	.57**	.84**	1.00							
7. CSASS: E_ANX	3.19 (1.77) 1-7	.35**	.58**	.56**	.58**	.84**	.55**	1.00						
8. CSASS: D_ANX	2.70 (1.60) 1-7	.50**	.67**	.66**	.65**	.92**	.71**	.69**	1.00					
9. CSASS: I_ANX	2.68 (1.56) 1-7	.57**	.72**	.71**	.69**	.91**	.71**	.68**	.82**	1.00				
10. PAS	4.75 (1.35) 1-7	-.17**	-.21**	-.21**	-.21**	-.16**	-.12**	-.15**	-.14**	-.15**	1.00			
11. MMBI: Overall	1.39 (0.92) 0-4	.46**	.67**	.66**	.65**	.63**	.47**	.55**	.58**	.60**	-.12**	1.00		
12. MMBI: EXH	1.45 (0.94) 0-4	.45**	.64**	.62**	.63**	.60**	.44**	.53**	.55**	.59**	-.12**	.97**	1.00	
13. MMBI: CYN	1.31 (0.97) 0-4	.44**	.65**	.64**	.63**	.61**	.47**	.53**	.57**	.58**	-.12**	.96**	.86**	1.00

** $p < 0.01$; FMI = Fear of Not Mattering Inventory; PES = Pandemic Experience Scale (Defeated= Subscale of feeling defeated; Trapped = Subscale of feeling trapped); CSASS = COVID-19 State-Anxiety Sources Scale (H_ANX = Subscale of Health State-Anxiety; E_ANX= Subscale of Economic State-Anxiety; D_ANX = Subscale of Daily Routine Change State-Anxiety; I_ANX = Subscale of Isolation State-Anxiety); PAS = Pandemic-specific Adaptability Scale; MMBI = Modified Maslach Burnout Inventory–Student Survey (EXH = Subscale of Exhaustion; CYN = Subscale of Cynicism)